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March 23, 2001

RECEIVED

MAR 23 2001

Ms. Magalie Roman Salas  
Secretary, Federal Communications Commission  
445 12<sup>th</sup> Street, S.W.  
Washington, DC 20554

FEDERAL COMMUNICATIONS COMMISSION  
OFFICE OF THE SECRETARY

Re: Deployment of Wireline Services Offering Advanced Telecommunications  
Capability and *Implementation of the Local Competition Provisions of  
the Telecommunications Act of 1996*, CC Docket No. 98-147 and  
CC Docket No 96-98

Ex parte presentation pursuant to C.F.R. § 1.1206

Dear Ms. Salas:

Catena Networks, Inc. ("Catena") met yesterday with the following Commission personnel: Peyton Wynns, Steve Selwyn, Thomas Tycz, Ellen Burton, Peter Trachtenberg, Bryan Clopton, Charles Iseman, Adbel Eqab, Dave Ward, Yog Varma, Whitey Thayer, Bill Howden, Bill Sharkey, Katie Rangos, Jim Lande, Chuck Needy, Colleen Nibbe, Mark Stephens, Rob Brantley, JoAnn Lucanik, Alan Feldman, Chris Barnekov, Aaron Goldberger, Les Selzer, Dennis Johnson, Uzoma Onyeije, Elizabeth Yockus, Jeremy Miller, Ben Childers, Rich Lerner, Jack Zinman, Rob Loube, Jon Stover, Paul Marrangoni, Anne Levine, John Adams, Emily Hoffnar, John Vu, Herb Neumann, Jonathan Kraushaar, Keith Brown, Bill Dever, Lynne Milne, Robert Cannon, Bruce Romano and Jessica Rosenworcel.

During the meeting, Gary Bolton and Doug Cooper discussed Catena's integrated approach to providing broadband services by combining voice service (plain old telephone service, or "POTS") and ADSL functionality on linecards. In particular, the discussion covered the company's goal of making broadband widely available and affordable to all Americans. Provided during the discussion was a handout, a copy of which is attached.

Respectfully submitted,



Stephen L. Goodman  
Counsel for Catena

Attachment



**Bandwidth Task Force  
Presentation**

**Gary Bolton**

**Doug Cooper**

**March 22, 2001**

# Catena Company Overview

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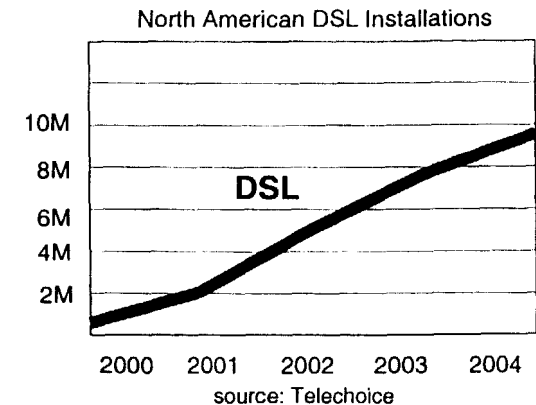
Catena Networks' new, state-of-the-art 100,000-square-foot R&D center in Ottawa, Ontario

- Founded in December 1998
- Headquartered in Redwood Shores, California
- R&D operation in Ottawa, Ontario, Canada
- 240 employees; more than 200 in Engineering

# Industry Trends

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- **Tremendous unmet consumer demand for DSL**
  - RHK expects DSL market to grow 128% per year through 2003
  - More than 40% of subscribers still unable to get DSL
- **More subscribers served from Remote Terminals**
  - More than 60% of new lines are deployed from RTs
  - Currently 30% of subscribers served from RTs; growing to more than 50% by 2003
- **Service providers migrating to a converged, packet-based access network**
  - Convergence has taken place in network core
  - Voice and data still separate in access network
  - Current data overlay (DSLAM) model not scalable or profitable

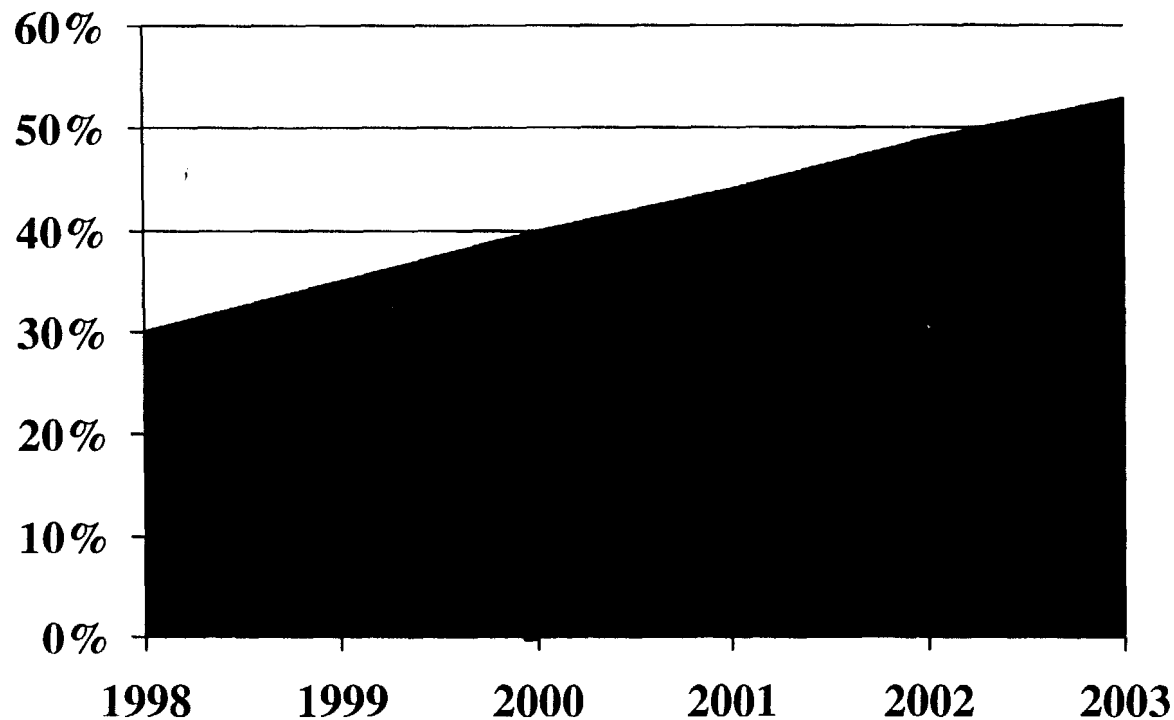


***Integrated Access Architecture required  
for profitable, volume deployment***

# Access Trends

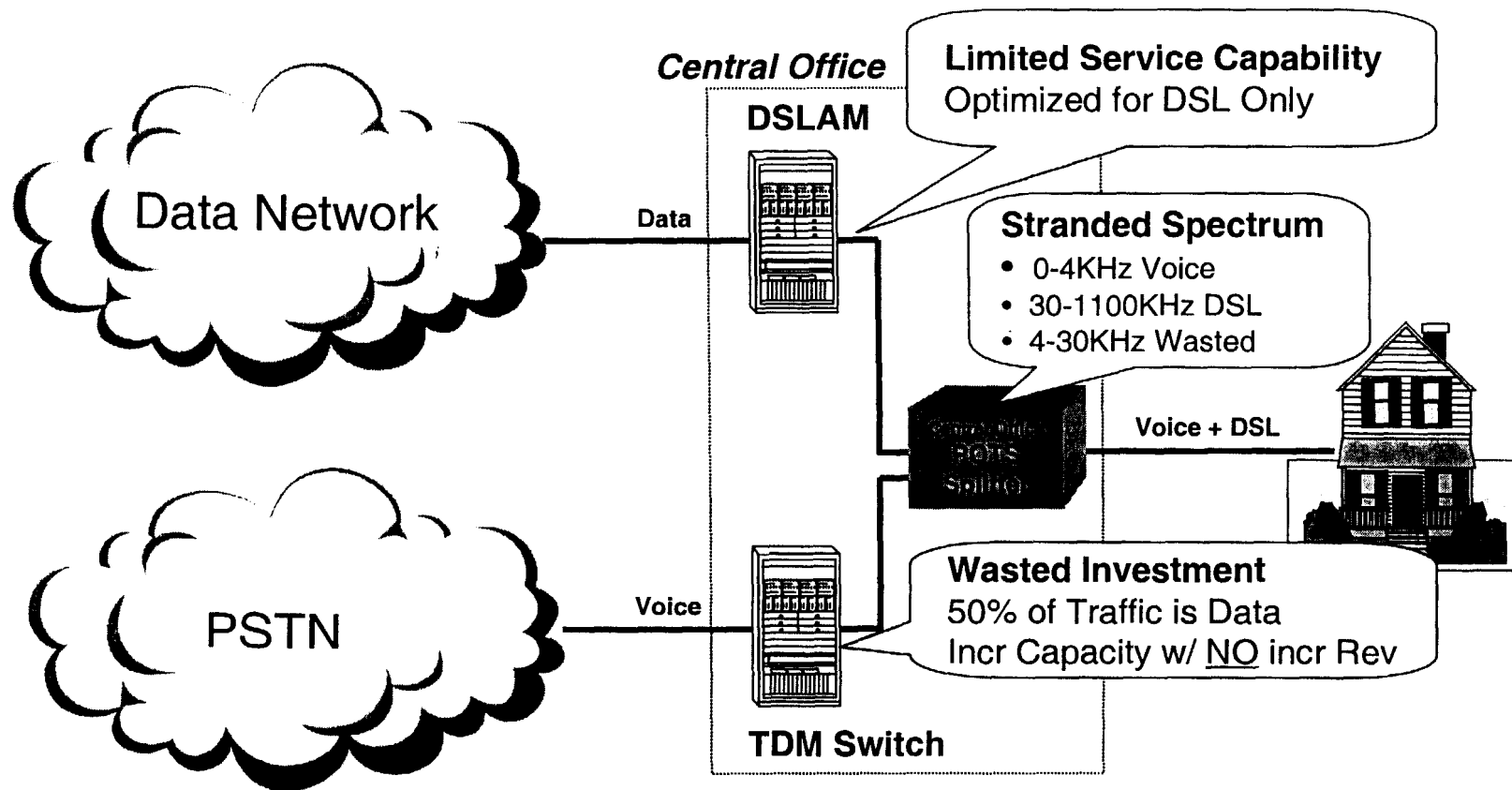
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Access Lines served by RTs



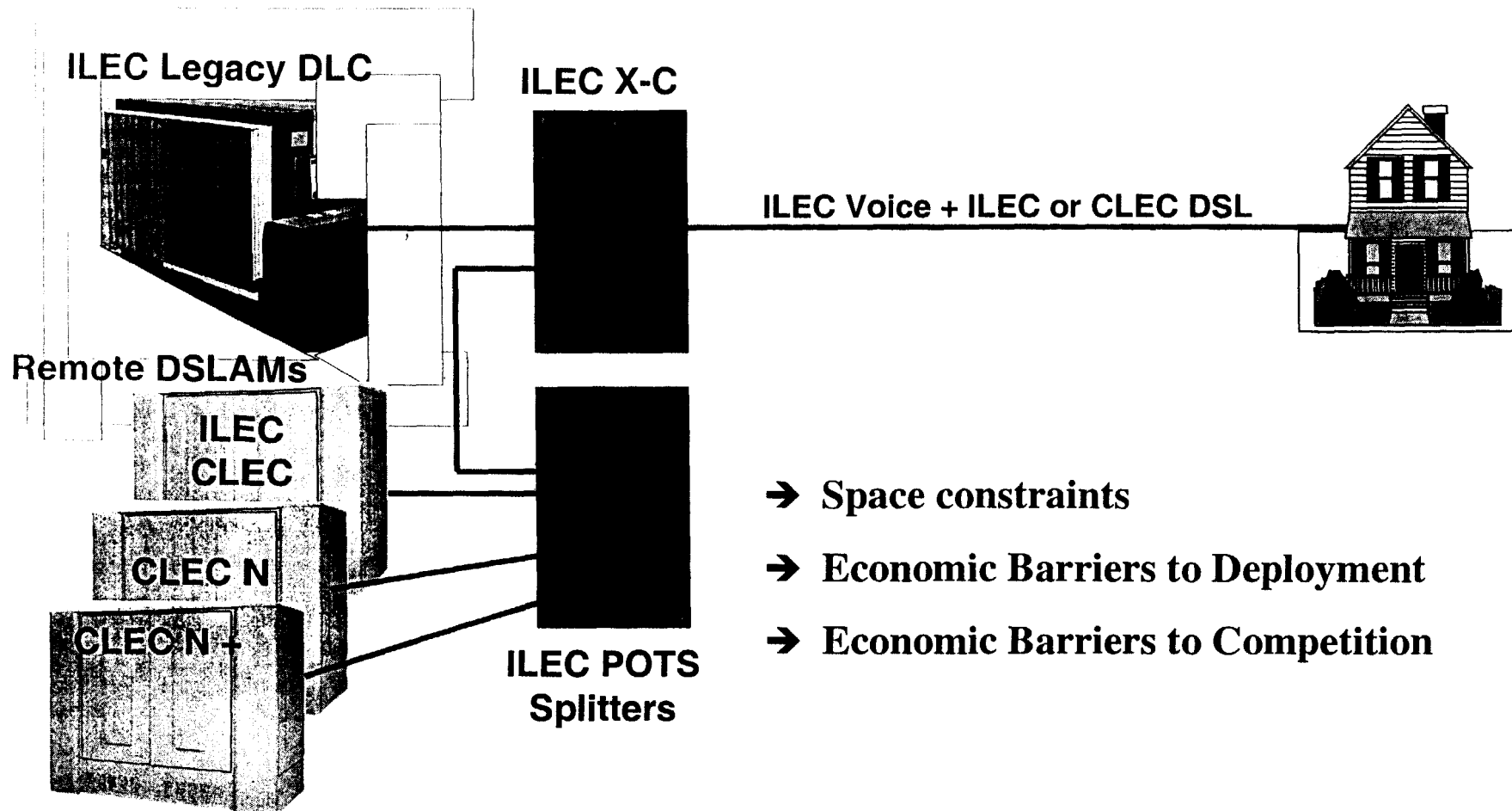
*Within 3 years, majority of subscribers  
will be served from RTs*

# Today's DSL CO Overlay Architecture



*This model is difficult to extend to Remote Terminals*

# Remote Terminal Overlay Model

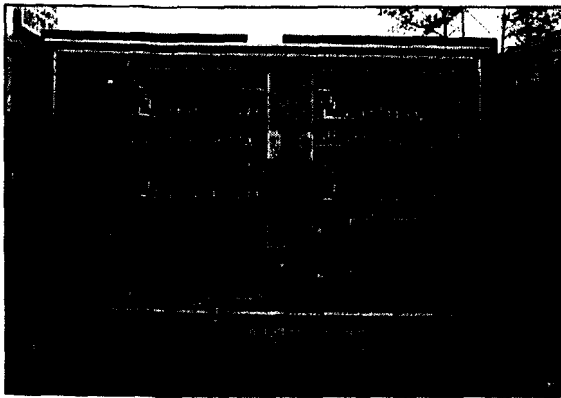


- Space constraints
- Economic Barriers to Deployment
- Economic Barriers to Competition

***Overlay Model Won't Work in Many RTs***

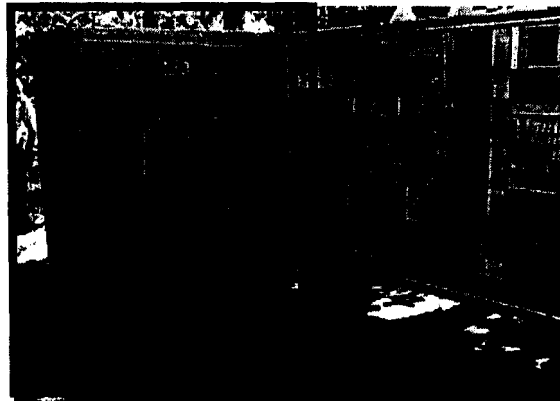
# Current Solutions Don't Add Up

Mini-Ram



- Space constrained
- Tough to install
- Can support a maximum of only 16 DSL lines

Remote DSLAM



- Prohibited capital and operational cost
- "Easement" issues
- Construction lead-time

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- Where do you put the POTS splitter and Remote DSLAM ?

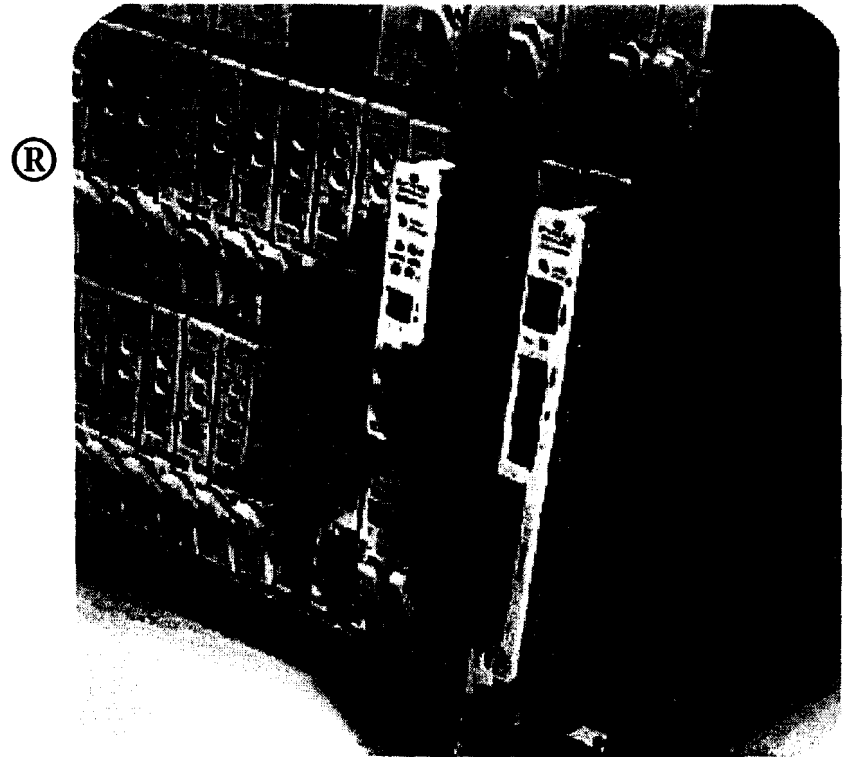
***Overlay solutions are expensive and impractical: RTs require an integrated deployment model***



# CNX-5 Integrated Line Card Upgrade

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- A simple, elegant, and inexpensive ADSL upgrade solution for the Lucent SLC Series 5 Digital Loop Carrier.
- Integrated POTS and ADSL on any copper pair.
- Unrivaled speed of DSL deployment.

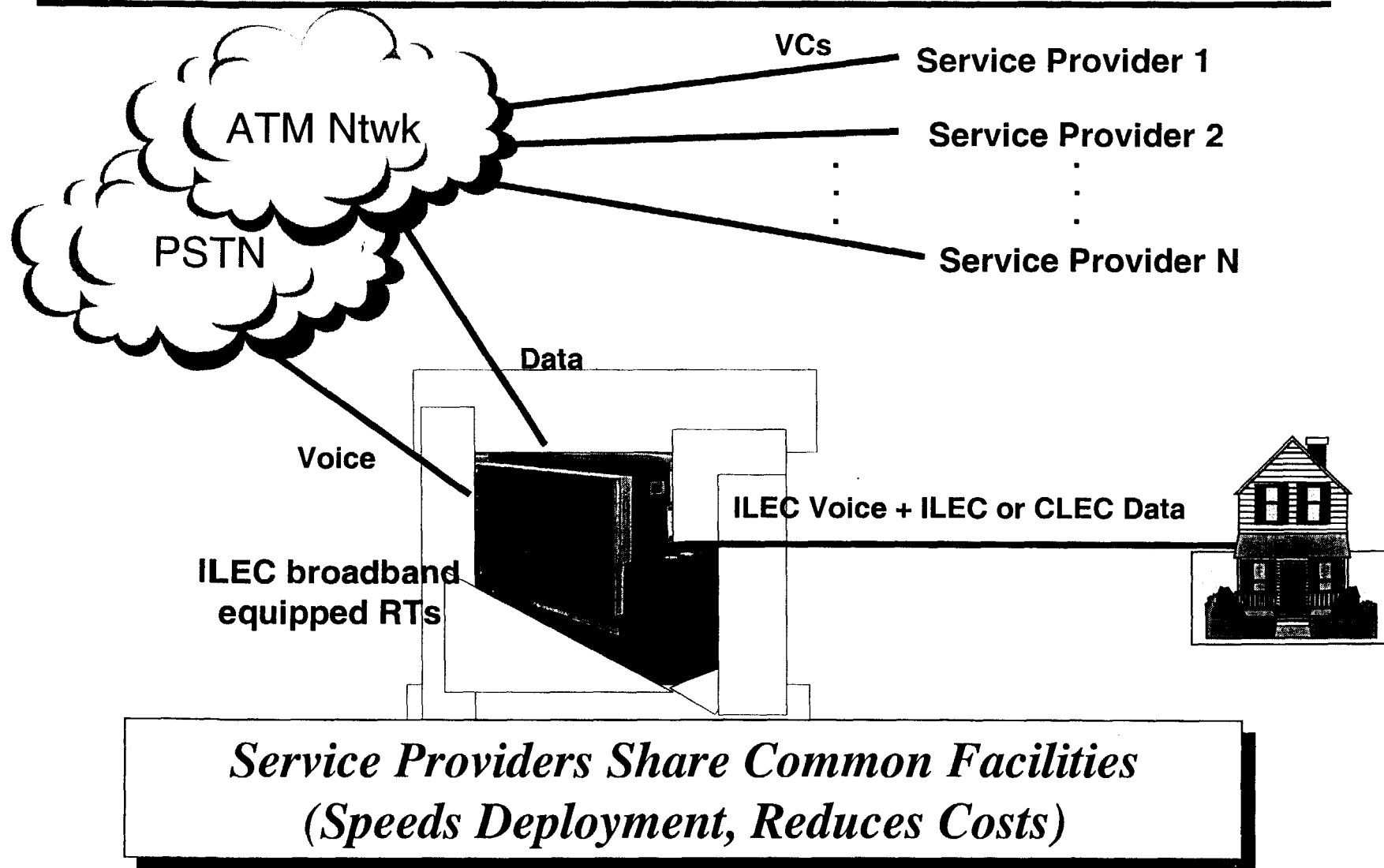


# Benefits of integrated POTS+DSL

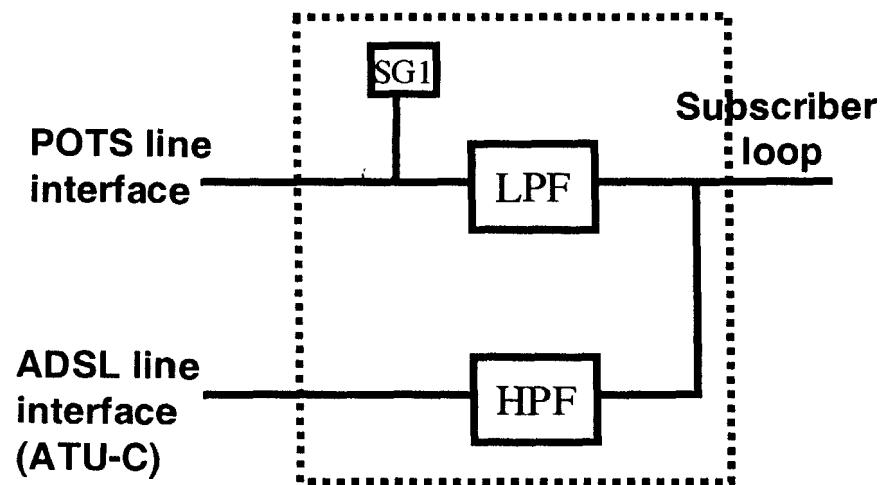
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- **Maximize DSL coverage**
  - Accelerates DSL deployment to lower density areas
- **Simple and elegant**
  - No complex wiring, simple RT card swap for DSL upgrade
- **Low start-up costs**
  - Lowest possible cost DSL solution for RTs
- **Scalable**
  - Integrated solutions are granular and scalable
- **Amortized backhaul**
  - Common facilities amortized over entire serving area
- **Reliability**
  - Installation simplicity reduces number of network failure points
- **Economically viable**
  - Allows affordable consumer pricing

# Virtual Unbundling



# Traditional POTS Splitter



LPF = Low Pass Filter - couples 0-4 kHz POTS signals onto the subscriber loop

HPF = High Pass Filter - couples 25 kHz to 1.1 MHz ADSL signals onto the subscriber loop

SG1 = POTS Splitter Signature - allows POTS test head to determine the presence of a POTS splitter

- The traditional way to couple POTS and ADSL signals onto the subscriber loop
  - Strands spectrum
  - Adds cost and complexity
  - Stifles network convergence
  - Impedes technology innovation and the delivery of converged services
  - prevents ILECs and CLECs from adequately testing and maintaining subscriber loops

# Issues with POTS Splitters

The traditional POTS Splitter is a simple magnetic device that mechanically “splits” the Voice band (0-4KHz) from the DSL band (27KHz-1.1MHz)

## *Background:*

- POTS Splitters are also a regulatory demarcation point
  - ILEC provides POTS on the low frequency side of the POTS Splitter
  - ILEC or CLEC provides DSL on the high frequency side of the POT Splitter

## *The Problem:*

- POTS Splitters prevent ILECs and CLECs from adequately testing and maintaining full frequency range of subscriber loops

## *The Result:*

- Complex new “Smart” POTS Splitters are being proposed
  - Add expense, complexity, and size to facilitate testing capability
  - Splitters strand bandwidth and decrease network reliability

***POTS Splitters can be eliminated from the RT collocation model***

# Test Access Issues

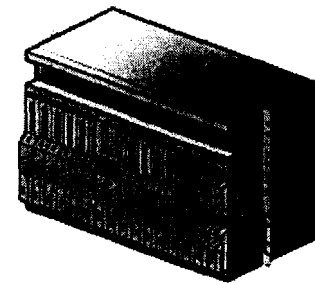
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- The traditional POTS splitter approach for line sharing introduces several problems that prevent the ILEC and CLEC from adequately testing and maintaining the subscriber copper loop
  - HPF prevents CLEC from having DC access to the loop which prevents subscriber loop testing
    - solution is to allow bypass of HPF via a relay contact
  - CLEC must be able to detect if the voice line is off-hook
    - solution is to sense whether the line is off-hook prior to initiating testing
  - LPF prevents ILEC from having full spectrum test capability of the subscriber loop which prevents adequate broadband loop qualification
    - solution is to allow bypass of LPF via a relay contact
  - CLEC must be able to remove the ILEC provided POTS battery and ground to allow loop testing
    - solution is to remove ILEC provided battery and ground via a relay contact
  - If a power or control failure occurs during CLEC testing, normal POTS operation must be restored within a preset time period
    - solution is to provide a time-out function in the splitter which ensures POTS service is restored in the event of a failure

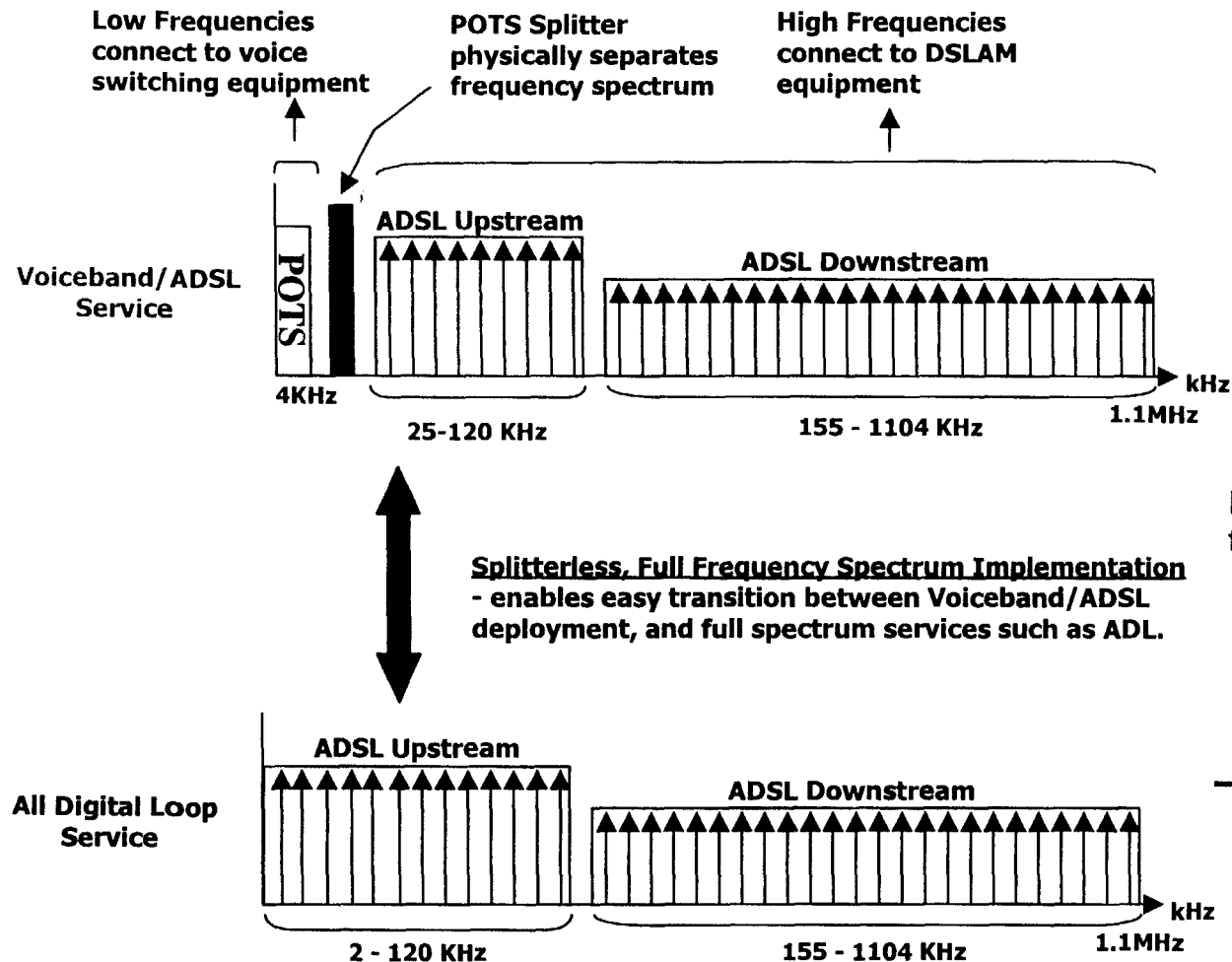
# Splitterless POTS + DSL Applications

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- 1. Legacy DLC Upgrade
  - simple
  - scalable
  - reliable
  - lowest startup cost
  - fastest deployment
- 2. Broadband Loop Carrier
  - 100% broadband
  - lowest operational costs
  - graceful packet migration



# Full Spectrum Management



Full spectrum is required for full bandwidth services:

- ADL
- Symmetric services
- G.SHDSL
- Derived voice



# Catena's Regulatory Position

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## **Basic Premise**

- Catena seeks to drive technology innovation and integration so that advanced services, specifically DSL, is as affordable and available as POTS is today
- Regulatory policies should encourage, not impede, technology innovation and silicon integration that will significantly benefit all Americans

## **Catena's Comments in CC Docket Nos. 96-98 and 98-147:**

- Adopt a regulatory model for Remote Terminals that allows virtual collocation
- Regulatory requirements must be fairly apportioned among cost causers
- Correct pricing signals will encourage investment and competition
- Intermodal competition (with cable, wireless) is real competition

# Activity on Capitol Hill

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- **Regulatory Parity Argument**
  - Telcos approach data with no monopoly power
  - All broadband providers should be regulated equally
  - Converging services require less, not legacy, regulatory models
- **Broadband's Role in New Economy**
  - Texas report sums up rural problem: attract new business, stem outflow
  - Haves and have nots breaking along economic and educational lines
  - Greenspan notes IT role in increasing productivity: January 2001
- **Rural/Underserved initiatives have bi-partisan support**
  - Senator Rockefeller's (D-WVa) bill, companion bill in House
  - Representative Cubin's (R-Wyo.) 2% bill for mid-sized rural telcos
  - Senator Clinton's (D-NY) grant bill for rural areas/new technologies

# Building New Infrastructure

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- **Senator Rockefeller's Broadband Bill**

- 10% tax credit: current generation (1.5 M down/200 K up)
- 20% tax credit: next generation broadband (22 M down/5 M up)
- Bill proposes amending IRS code to spur rural development
- Bill is technology neutral, oriented toward “last mile” gear

- **Representative Cubin's Bill**

- FCC to define ILEC class with less than 2% of access lines
- FCC to separately evaluate regulatory burdens on 2% carriers
- Would preclude ARMIS reporting or separate affiliate creation
- Monies saved to be used for infrastructure investment

*Incentives offer opportunities for citizens and companies alike*

# Conclusions

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- **Integrated POTS+DSL Technologies Allow Providers to:**
  - Deploy cost effective and efficient network architectures
  - Continue innovation of technology and future services
  - Lower economic barriers for competitive providers
  - Compete effectively with cable operators
  - Avoid using mechanical POTS Splitters
- **Increasing Speed and Breadth of Deployment Are Critical**
  - Efficient architectures reduce network bottlenecks
  - Innovation and investment stall in face of uncertainty
  - Competition will follow deployment by someone someday
  - DSL & cable competition means that consumers have choices
  - Solutions for today should not impede innovations of tomorrow

*Integrated RT solutions allow Advanced Services to become ubiquitous, affordable and available to all Americans*